

# Knowledge-Based Strategies for Knowledge Intensive Business Services: a Multiple Case-study of Computer Service Companies

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**Abstract:** While knowledge is increasingly considered to be a key resource for companies, the models for formulating business strategies that explicitly include it as a core component are still lacking. The paper investigates such issues by considering the particular case of computer service companies, which can be seen as Knowledge Intensive Business Services (KIBS) firms connecting the sources of innovation (i.e. large multinationals, research laboratories, universities, etc.) to the individual needs of the local customers. In doing so they operate as mediators between the local cognitive requirements and the more generic knowledge available in the global environment. Since those companies base their competitiveness on the capability to manage knowledge flows among various actors, the formulation of their business strategies requires new approaches that directly focus on knowledge assets and relevant processes. The paper describes the results of a survey involving twenty-one computer service companies located in the Northeast of Italy. The study allows the user to draw useful schemes for the identification of knowledge-based strategies, which can be of use beyond the specific context of investigation. In particular, rather than proposing completely new models for knowledge-based strategic formulations, the paper analyses the way knowledge can be integrated into more traditional strategic frameworks. The assumption is that these approaches can be more comfortable and understandable by the management of companies whose business is strongly based on knowledge but don't have deliberate knowledge management strategies.

**Keywords:** knowledge-based strategy; business strategy; KIBS; computer services; case study

## 1. Introduction

Since in the current economy the ability to manage knowledge assets is increasingly recognised as core competence, the emphasis put by scholars and practitioners on the "cognitive capabilities" of companies is growing. Especially, a knowledge-based view of the firm (Grant 1996) requires the focalisation of proper ways to plan, manage, and monitor the contribution given by the cognitive resources to the business goals. However, the models for helping companies to formulate strategies that explicitly consider knowledge as a core component are still lacking. In particular, there is the need to link the company's *knowledge strategy* with its "general" corporate or business strategy. This is true for all companies, but especially for those whose activities are, by nature, *knowledge intensive*.

This paper investigates such topic in the case of *Knowledge Intensive Business Services* (KIBS) firms (Miles 2005), namely companies whose main function is to connect external knowledge sources (i.e. large multinationals, research laboratories, universities, etc.) to the individual needs of customers and especially those that can't interact effectively with the global environment. In doing that they perform as mediators between the specific knowledge, buried in the daily practice of their client firms and the more generic knowledge resources available in the economic system (Miles 2005; Aslesen and Isaksen 2007).

Since the activity of KIBS is chiefly based on the capability to manage knowledge flows among various and different players, the formulation of their business strategies requires new approaches that directly focus on the cognitive processes they perform (Landoni et al. 2008). Hence, the present lack of models for formulating business strategies that explicitly include knowledge as the key resource is particularly critical for KIBS (Muller and Doloreux 2009). Also, there is the need to link the formulation of a Knowledge Management (KM) strategy to the more traditional approaches of strategic planning currently used by managers (Haider 2009).

The aim of the paper is to provide insights into these issues by describing the results of a survey concerning a specific category of KIBS, i.e. the computer service companies, located in a specific area (Northeast of Italy). Even if the IT industry is dominated by a restricted number of large vendors (Microsoft, Oracle, SAP, etc.), the role played by small computer service companies that operate in a

particular geographic area is still crucial for fully meeting the requirements of the local customers (Bolisani and Scarso 2009). This role can be fully explained in cognitive terms, and these firms can be seen as KIBS (Martinez-Fernandez and Miles 2006; Rajala et al. 2008). The study allows to draw some useful classifications of knowledge-based strategies, and to test these schemes for the identification of the strategic behaviour of the surveyed companies. Beyond the specific context of investigation, the findings can provide information about the strategic planning of KIBS in general.

The paper is articulated as follows. The next section illustrates and discusses some “traditional” approaches that companies can use to formulate a knowledge-based business strategy. Section three introduces the notion of KIBS and applies it to the computer services sector. Section four describes the purpose and the methodology of the research. Section five illustrates the main findings of the empirical investigation with a particular focus on the relationships between the business strategy pursued by the surveyed companies and the management of their knowledge assets. The last section discusses the utility of the illustrated approaches, and provides some suggestions for their application to the broader issue of KIBS strategies.

## **2. Knowledge strategies and business strategies**

The relationship between knowledge and strategy has been already stressed in the literature well before the upsurge of interest in KM, but it is with KM that knowledge strategies have become a recurrent focus of analysis. To understand the nature of this relationship and its possible implications, it is useful to recall some relevant definitions.

The notion of strategy has been widely discussed in the management studies. At present there are many different definitions (for instance, “corporate strategy”, “business strategy”, “competitive strategy”, etc.), and also dissimilar positions about the possibility to formulate and plan a strategy formally (see e.g. Mintzberg 1994); but, on the whole, there is substantially common agreement that, in the business context, a strategy is associated with (Andrews 1980):

- the objectives and goals, generally formulated by the top management;
- the range of business that the company intends to pursue;
- the plans, policies and decisions that can be adopted to pursue all this;
- more generally, the kind of organisation the company is or intends to be and, related to this point
- the nature of contribution that the company intends to make to its shareholders, employees, customers, communities.

Conversely, there is less consensus on the notion of *knowledge strategy*. In a broad sense, knowledge strategy can be referred to the general guidelines that shape an organization’s manipulation of its knowledge assets (Kasten 2006). In practical terms, the notion can be associated to the plans of the organisation for making the best use of knowledge for competitive advantage (Zack 1999; Holsapple and Jones 2006).

Since a knowledge strategy should outline the way knowledge is deliberately used as a strategic “weapon”, its formulation should be strictly linked to the firm’s business strategy (Eisenhardt and Santos 2002). However, this association can be seen from two different viewpoints.

The first perspective focuses on the peculiar nature of knowledge as the key resource of companies. Accordingly, a knowledge strategy is seen as the set of choices and plans that determine the firm’s knowledge base (Bierly and Chakrabarti 1996). This calls for a strict relationship with the deliberate KM programmes of the organisation (Sveiby 2001; Kim et al. 2003; Wenger 2004), and the knowledge strategy practically becomes the *KM strategy*. This view can be applied to companies whose KM structure or plans are significant, and are integral part of the business and, consequently, of the competitive strategy.

The other perspective considers the knowledge strategy in terms of its direct fit to the firm’s business strategy (Zack 1999). In other words, the central point here is how knowledge can be effectively used to fit the overall strategic objectives of the company. This notion is more appropriate to companies that don’t have a deliberate KM programme but found their business on an intense use of knowledge, just like KIBS do. Even when these companies don’t have intentional KM plans, they exploit their knowledge base as a (often implicit) strategic ingredient for achieving competitive advantage.

To understand the way these companies can pursue their business goals, it may be useful to start from a classic view of business strategy and integrate the use of knowledge as strategic weapon into it. This can also help to improve the management of these companies: the assumption is that, for the majority of managers, an integration of knowledge as a component of traditional strategic frameworks can be more understandable and appropriate than defining completely new models of KM strategic formulations that may appear disjointed from the general view of the company. With this purpose, we will refer to three classic classifications of business strategies and to their possible adaptations to include and understand the potential role of knowledge in business.

## 2.1 Porter's competitive strategies

One of the most popular classification refers to Michael Porter's (1980) "competitive strategies" that are: *cost leadership*, which pursues efficiency by means of product standardisation or economies of scale; *differentiation*, which aims at the creation of new services or markets; and *focus*, which refers to the identification of a narrow segment or niche in which the company attempts to be the leader.

These strategic models can be applied to knowledge as well. A *knowledge cost leadership strategy* can refer to efforts to use of "existing" knowledge assets more efficiently. In other words, the company tends to exploit a specific well-controlled knowledge domain, by developing the capability to re-use the cognitive resources it possesses as quickly and efficiently as possible. Organisational (such as: structured documentation processes, taxonomies, knowledge maps, etc.) and technical arrangements (e.g. knowledge repositories, knowledge retrieval systems, etc.) can be adopted to ensure the efficient use of knowledge assets.

A *knowledge differentiation strategy*, instead, implies developing or activating completely novel knowledge when this is required by a new project or business. This implies the capability to resort to internal or external pools of knowledge, and to integrate and combine wide-ranging cognitive resources for facing a new problem. A focus on tools or arrangements that enhance exploration, creativity and knowledge sharing is therefore useful here.

Lastly, a *knowledge focalisation strategy* means that a company specialises on a particular knowledge domain. The scope of cognitive assets is restricted, but the knowledge of employees and, more generally, of the organisation is deeper. This strategy is especially suited to companies that base their competition on the capability to deliver specific but high-quality projects.

## 2.2 Knowledge strategy matrix

Some studies have built knowledge strategy classifications by developing and adapting the well-known Ansoff's product/market strategic matrix (von Krogh et al. 2001; Landoni et al. 2008). Here, we propose an adapted version of a *knowledge strategy matrix* (fig. 1) which is particular functional to T-KIBS firms (see section 3), and bases on the combination of applicative and technological knowledge. Technological knowledge refers to the technical specialisation of the company, i.e. the kind of technology required to deliver the products or services provided by the firm. The applicative knowledge considers the "client" perspective, i.e. the kind of business needs which the product or service is designed to meet. Four distinct strategies can be thus identified:

- *consolidation*: it implies to maintain the boundaries of the current cognitive positioning. To be successful, this strategy requires that the possessed knowledge base is continuously updated and exploited in order to provide always new and improved services;
- *expansion*: the company aims to develop its pool of technological knowledge (for instance, by acquiring competencies on new platforms, programming languages, hardware systems, etc.) while remaining in the same applicative area. This strategy is useful to meet specific needs of old customers that, for instance, are interested in a new application but require its adaptation to their individual requirements;
- *exploitation*: the same "old" technical knowledge pools are exploited to serve new customers. For instance, this can mean to adapt a vertical ERP system to another sector. The company needs to extend its knowledge about the business needs of new clients or applicative markets, which have not been considered so far;
- *exploration*: this strategy means to radically modify the pool of knowledge currently possessed, with the purpose to explore new technologies or new market applications. It is an effort to reach

The first strategy (“consolidation”) represents a conservative approach, which may be not risky in the short run, but can weaken the position of the company especially in highly dynamic environments. The last strategy (“exploration”) is very risky and requires a particular attitude of the organisation; however, if it turns out to be successful, this strategy can lead the company to reach a position of advantage in the future competition. The other two strategies can be seen as a balance effort to combine a growth without being kept locked in a specific domain and without the risks of investing in completely new areas.

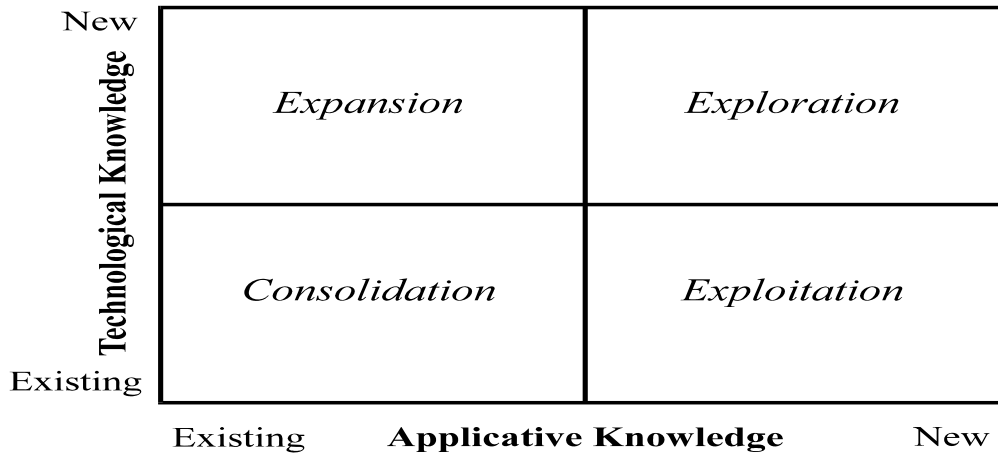


Figure 1: Knowledge strategy matrix

### 2.3 Knowledge chain

In the KM literature, there have been some attempts to adapt Porter’s notion of value chain to the activities of knowledge manipulation. One of the best results is Holsapple and Singh’s (2001) *knowledge chain* (fig. 2) that identifies and characterizes KM activities an organization can focus on to achieve competitiveness.

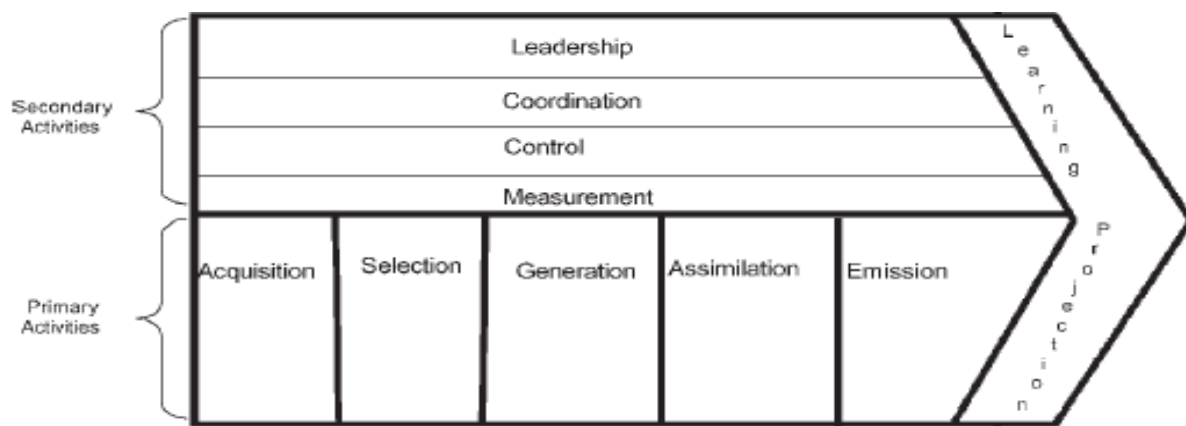


Figure 2: Knowledge chain (from: Holsapple and Singh 2001)

Similar to Porter’s approach, this model can be also used as a tool for strategic setting. In particular it allows managers to identify the knowledge manipulation activities that add value to the company, and the relevant supporting activities needed to sustain the former. The assumption is that, by focusing the knowledge strategy on the effective management of these critical activities, the organisation can improve its competitive position.

### 3. KIBS and computer services

The notion of KIBS was introduced by Miles et al. (1995) to denote private companies whose job consists in collecting, generating, analysing, and distributing knowledge with the aim to provide competencies and solutions that client firms are not able or willing to develop by themselves. KIBS firms rely on qualified professionals, which are experts in specific technical disciplines or functional domains, and supply information, knowledge or other knowledge-based services to the clients. Examples of KIBS include a great variety of categories (Thomi and Böhn 2003): business consultancy and HRM, marketing and advertising, R&D services, computer and IT-related services, legal services, and technical services. A useful distinction has been made between P-KIBS (pure professional KIBS) and T-KIBS (technology-based KIBS, such as R&D services - Miles et al. 1995). Recently, an additional category has been included: C-KIBS, that refers explicitly to computer and software related services (Martinez-Fernandez et al. 2004).

Knowledge is the major asset that KIBS firms handle since they acquire, transform and supply knowledge to the client organisations. Usually, such knowledge is created in a strict contact with the clients, who are consequently directly committed to giving a substantial contribution to its production and are involved in interactive learning processes (Bettencourt et al. 2002; Leiponen 2006). The complex nature of knowledge as the basic element of the service shapes the structure of the KIBS sector, since the “useful” knowledge is not as generic and mobile as is often considered. For that reason, rather than isolated KIBS companies it would be more appropriate to speak of KIBS sub-sectors or chains (Miles 2005), consisting of the combination of various firms whose different cognitive specialisations integrate. Usually, there are (few) large trans-national KIBS companies, that “lead the way” with the new innovative services, and a larger number of small service firms, which deal with specific areas and/or niches of market.

Recent studies underline that KIBS play an essential role in the processes of technological development of regional systems, because they provide the intangible assets, which are the key drivers of innovation (Miozzo and Grimshaw 2006). Also, since they *shuttle* between distinct clients, KIBS carry new ideas and best practices from one firm to another, thus resulting a vehicle for the diffusion of innovative ideas and practices (Smedlund and Toivonen 2007).

According to various scholars (den Hertog 2000; Smedlund and Toivonen 2007) KIBS can play a range of functions in innovation processes. As *facilitators*, they help the clients to develop their own products or processes. As *carriers* (or *brokers*), they transfer innovations developed elsewhere. As *innovation sources*, they directly elaborate innovative solutions for the customers. On the whole, their impact on the clients' innovative capability can vary, depending on the kind of relationship that is established (Hyypiä and Kautonen 2005). When KIBS assume an intermediate position between external knowledge sources and local recipients, they operate as *innovation brokers*, performing the function of “bridges for innovation” (Muller and Zenker 2001; Leiponen 2006), i.e. acting as interface and mediator between the knowledge buried in the daily practice of client firms and the generic knowledge available in the economy as a whole. KIBS are also containers and dynamic sources of “quasi generic knowledge” extracted from repeated interactions with customers and other actors, including producers of new scientific knowledge. They are thus complementary to the public R&D sector as well, and serve as a tie or conduit between research centres and business firms (especially the smaller ones) that lack internal resources to participate in public research directly.

As far as computer service firms are regarded, they have a substantial role in the current knowledge-based economy. In particular, computer service companies encompass a highly intellectual value-added, since their job consists of applying the skills and competencies of their employees to solve the problems raised by clients (Rajala et al. 2008). Therefore, the source of their competitive advantage is grounded on the capability of (internally) developing and (externally) acquiring, integrating and assimilating, processing and transforming, accumulating and storing, retrieving and finally transferring to the clients a specific set of knowledge, in the form of an applicative solution. Therefore, knowledge is the “raw material” of the business processes of those companies, and accordingly they can be considered KIBS firms in all respects. This has been confirmed by many authors, who used such notion, and related concepts, to analyse the computer service sector (Miozzo and Grimshaw 2005; Martinez-Fernandez and Miles 2006; Aslesen and Isaksen 2007; Rajala and Westerlund 2007). Hence, those companies provide an interesting empirical field to investigate the utility of a knowledge-based approach to the formulation of business strategy.

#### 4. Empirical survey: purpose and methodology

Here we present the results of a study of KIBS aimed at investigating the relationship between the business strategies pursued by companies and the knowledge-intensive orientation of their business, and classifying these *knowledge-based strategies* in accordance with the schemes previously illustrated.

The research was carried out using a multiple case-study methodology (Yin 1989). Such approach, in fact, well suits with the exploratory nature of the study and the complexity of the phenomenon under examination (Leedy and Omrod 2005). In particular, the study deeply analysed the business and knowledge processes of 21 small computer services companies (tab. 1) located in a particular region (Northeast Italy, and specifically the Veneto Region).. In the investigated area, the composition of the computer service industry is homogeneous enough to make comparisons possible (i.e. companies have similar size, strategic dimension, marketing approaches), but on the other hand the companies are sufficiently diversified to enable the identification of different strategic approaches. The number of computer service firms in the area amounts to some thousands (around 7,100 in 2007), and represents about the 9% of the Italian ICT industry. The firms' average size is small: more than one half of them have a turnover that does not reach the million Euros with less than 10 employees. Also, in Veneto there is no large firm operating at an international level, and the general picture of the local computer service sector consists, for the most part, of: a) small vendors of standard products; b) small application developers specialising in the customisation, commercialisation and servicing of standard suites, and c) small software houses or service firms that work in collaboration with big international IT vendors. Given the aim of the study, the pure resellers (as well as the micro software houses) were excluded from the sample, while the focus was on those suppliers capable of (partly) producing fresh knowledge based on existing technological streams, and of interacting with customers effectively. The research was mainly conducted in the first part of 2008, which implies that the findings are not influenced by the economic crisis that started to impact on the industry at the end of 2009.

**Table 1:** An outline of the cases examined (disguised names for reason of confidentiality; details can be provided by the authors)

Company	Specialisation	Main markets	Size
A	IT Infrastructure	SMEs	7
B	ERP	Retailing; Manufacturing	50
C	ERP	SMEs; Beverage	60
D	ERP; Business Intelligence	Manufacturing SMEs	110
E	IT Infrastructure	Finance; Insurance	50
F	IT Infrastructure	SMEs	20
G	ERP	Manufacturing SMEs	100
H	Test and measuring systems	Manufacturing; Laboratories	22
I	Network management	Large enterprises; Public org.	53
J	Software applications	Large manufacturing firms	40
K	Security; Business Intelligence	Manufacturing firms	26
L	IT Infrastructure	PA; Medium enterprises	30
M	Services; Connectivity	PA; Private companies	60
N	ERP; Consulting	Manufacturing SMEs	10
O	ERP	Manufacturing	250
P	MIS	Finance	273
Q	Information Systems	SMEs; Retailing; Hospitality	140
R	ERP; MIS	Large distributors	70
S	ERP	Manufacturing SMEs	50
T	BPR	Large distributors	15
U	Consulting	PA; Large firms	9

The case-studies were conducted by making semi-structured interviews with managers, based on a written list of topics previously sent to the interviewees. Each interview aimed to examine how the single company is able to develop and deliver innovative services through the processes of external acquisition, internal processing (creation/elaboration, storage and retrieval) and finally transfer the relevant knowledge to the clients. The study was also intended to discover whether and to what extent the surveyed companies are conscious of the value of their cognitive resources, and how they manage them. Clearly, a special emphasis was put on the connection between the formulation of

business goals by the top management, and their actual implementation, especially with regard to the exploitation of the company's knowledge assets.

In detail, based on the points highlighted in the previous sections, the research questions that the study attempted to address are as follows:

- Are, and to what extent, the companies aware of the strategic value of their knowledge assets? What resources do they activate in relation to that?
- How does the single company generate economic value through the processes of external acquisition, internal processing and finally transfer the knowledge needed to successfully deliver computer services to the client firms?
- Is it possible, by analysing these findings, to identify the main knowledge-based characteristics of the strategies pursued by computer service companies (and KIBS firms in general)?

## **5. Main findings and discussion**

### **5.1 Cognitive characteristics of the surveyed firms**

Firstly we will describe the overall features of the sampled companies from a cognitive perspective. In the following section, we will apply the schemes previously illustrated for identifying and classifying the knowledge-related characteristics of their strategies.

Although with some variations from one case to another, the interviews confirm that the surveyed companies are rich of technical and applicative know-how and expertise, which allow them to fully meet the local demand for computer services. In particular they deliver highly customised solutions, and the core of their business is the capability to identify and analyse the problems of clients, and to find and mix up the proper solutions based on the available technical tools developed elsewhere.

The case company managers confirm, with no exception, that knowledge exchanges with clients are vital. The clients are not only the final users of services, but also the source of new knowledge that the providers can use for future projects. They also affirm that cognitive interactions and exchanges with clients are favoured by the proximity, both in geographical and especially in cognitive terms (i.e. language used, familiarity with local business practices, shared social and economic environment, etc.).

As regards the knowledge pools used by computer service companies, since any application is an "ad hoc" solution developed or personalised for each specific customer, it is generally impossible for them to simply replicate "old" projects. Most interviewees assert that the use of systematic KM programmes, to store and retrieve documentation of past projects, might be very important for their business. Unfortunately, due to the small dimension, only a few firms declare that they are able (or willing) to devote resources to this complementary but essential activity. This is the reason why the experience and capability of people are still the most important assets of companies, as confirmed by all respondents, and by the fact that training and recruiting are regarded as very crucial activities.

The interaction with large vendors (and, more generally, with the sources of generic technological knowledge) is considered critical as well, although it varies depending on the kind of product or service provided by the firm. Especially for the companies that are direct partners of large multinationals (e.g. SAP, IBM, etc.), these interactions often entail bi-directional knowledge flows: the computer service firm provides technical knowledge to its customers, and provides information about the final markets to the large vendor as well. Consequently, the nature of knowledge exchanges modifies with the partner involved along the value chain.

### **5.2 Knowledge strategies and their classification: lessons learned**

The survey confirms that knowledge really seems to be the core asset of the investigated companies and that they are aware of it. The attention devoted by managers to the capabilities of the employees, to the possible re-use of the experience of past projects, and the importance ascribed to the knowledge exchanges with clients and vendors is a further proof of it. Therefore, an essential question is to understand how the exploitation of this asset can be planned for business objectives.

As for this, the cases are useful for interpretative purposes: they allow to understand the strategic conduct of knowledge-intensive companies, by means of the classifications and models previously

described. In particular, it is possible to identify the available strategic options, their contents, and the critical aspects of their implementation. Similarities and differences with the classic strategic models defined for traditional manufacturing firms can be also highlighted, and comments for the implementation of these strategies can be made.

As concerns the model of *competitive knowledge strategies*, the study allows to reflect on the viability of the different strategies in relation to the characteristics of the various firms. The *cost leadership strategy* aims at providing low-cost services to the customers by exploiting the existing knowledge pools in an efficient way. For computer service firms, it requires that their knowledge assets be activated rapidly to meet the demand. This calls for a highly structured approach, which implies a sufficient standardisation of procedures, codes, and contents. The possible re-use of knowledge assets can enable the exploitation of cognitive "scale economies". In the computer service industry, this strategy seems to be appropriate for large vendors only, who distribute standard applications in a large market, but not for small local providers highly specialising in particular segments of limited size, as those analysed.

As regards the *differentiation strategies*, they involve the capability of activating really innovative projects within internal R&D departments. In general, this appears to be appropriate for the companies that have sufficient resources, while it can be difficult or risky in the case of smaller firms. Finally, *niches or focus strategies* seem to be aligned with the *cognitive size* of small providers (like many of the surveyed companies). But more generally, this strategy appears to be appropriate with the customised services that most computer services companies provide. As a matter of fact, the interaction with individual customers or for specific services increases the cognitive specialisation of companies. Even when the companies deal with "general" solutions developed by others (for instance, an international ERP system), they tend to specialise in offering personalized configurations. Here, it can be concluded that customisation is an essential ingredient for a competitive strategy that allows KIBS firms to differentiate from one another, and this leads to a cognitive specialisation as well.

The same kind of analysis can be done with reference to the *knowledge matrix model*. The four strategies in the table allow focusing on the risks and long-term sustainability that characterise the efforts of computer service companies in managing their knowledge assets. The *consolidation strategy* is the easiest one, especially for small-sized firms, but the companies need to build a robust knowledge base. Its sustainability depends on the capability to maintain current clients; therefore, the companies willing to pursue such strategy tend to keep their focalisation on existing customers' needs, which means that, without appropriate lock-in policies to keep the clients (which is, generally, easier for larger KIBS firms and more difficult for small providers), there is the risk that a sudden change in the market weakens the company's position.

The two strategies of *expansion* and *consolidation* are similar as regards the nature, but complementary as concerns the effects. They require deliberate efforts and investments to extend the knowledge base of a company, to identify new uses of a specialised domain. This can be very expensive in terms of both financial and human resources, and difficult for small KIBS companies. The survey shows that this strategy is often pursued by merge & acquisition of other companies, which can however lead to problems of integration and strategy focalisation. Lastly, the *exploration strategy* is the most risky and difficult, since it requires the activation of knowledge resources well beyond the boundaries of the individual company. In addition, a complication can be the old age of a company, because this factor tends to introduce a path dependency and a lower attitude to risk-taking.

Lastly, the *knowledge value-chain model* helps to understand why and how companies focus on specific activities of knowledge management (either deliberately or implicitly). Here, we will just mention two examples of how the model can be used.

First, the model allows to understand which of the primary knowledge-based activities is mostly critical for a company. For instance, for companies that provide customisation of standard services or products brought out by others (like, for instance, the computer service companies that are part of the SAP network), the most important cognitive activities are probably the assimilation of the knowledge coming from the big vendor and its adaptation to the specific requirements of the individual client firms. On the contrary, the generation of new knowledge and, even more important, its external acquisition and selection seem to be the real source of value for the companies that produce



proprietary systems. This can explain why these companies organise their knowledge-based activities in a different way.

Also, the model allows to recognize the importance of the secondary activities. For example, it resulted that, in the majority of the investigated companies (which are mainly small), few resources can be devoted to “organisational” activities. The supporting processes of the knowledge chain (e.g. organising knowledge mapping, storage and retrieval; arranging systematic training of employees, etc.) are generally less developed in these firms, because they are more involved in day-by-day projects due to their limited resources. As a result, the overall effectiveness of the “knowledge chain” can suffer.

## **6. Conclusion**

On the whole, the approach to strategic analysis proposed here allows rereading the classic strategic models under a new light, namely by focusing on the knowledge assets. This appears particularly critical for companies that found their business on knowledge-intensive processes, like KIBS firms. The research conducted so far is mainly an explorative analysis of the strategies and behaviours of companies seen from a knowledge-based perspective. It seems to indicate that traditional models offer useful classifications from a descriptive viewpoint, in that they allow to identify the different competitive positioning of the various companies in a knowledge-intensive sector (like the investigated industry).

In addition, the models prove to be applicable as managerial tools as well. Actually, the connection between traditional strategic frameworks and the new notion of knowledge strategy is suitable for managers: since these traditional models are often part of their professional background, the effort of extending and adapting them to knowledge assets can be particularly effective. Also, this approach can facilitate the introduction of KM practices, even in small businesses. The findings also provide interesting insights into the broader issue of the strategic use of knowledge. An overall impression is that there is no “best approach” to define and classify knowledge-based strategies. Even though there are relations between the various classifications (e.g. the “knowledge cost leadership” strategy has points in common with the “knowledge consolidation” strategy, etc.), each model shows different and complementary views. In any case, this articulation of viewpoints can be particularly useful, because there is not a “one best way” to manage knowledge assets in an effective way, and managers may need to see things in different ways.

The current limitations of this study also represent the opportunity for a future research agenda. A first point relates to the sample examined. Although the investigated companies represent a good example of KIBS industry - where the management of knowledge is central for the business - the analytical models proposed here require further empirical validations in other knowledge-intensive industries, or even in traditional sectors. In addition, the sector analysed is populated by many small businesses and is geographically restricted. This was consistent with the exploratory aim of the research, but there is the need to conduct more extensive surveys of larger and differentiated samples. A second important limitation is that the study has mainly a descriptive purpose. The research allowed to identify possible classifications of the conducts of existing companies. Instead, the development of the models in the direction of operative guidelines still need the development of formal methods for knowledge-based strategic planning. For instance, it may be useful to investigate how these models can be used to plan knowledge strategies based on specific environmental aspects (for instance: markets, competitors, local socio-economic constraints etc.), organisational characteristics of the company, business projects, etc. With regards to this, the paper provides interesting insights that represent a starting point for further research.

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## **References**

- Andrews, K. (1980) *The Concept of Corporate Strategy*, 2<sup>nd</sup> Edition, Dow-Jones Irwin, Homewood, IL.  
Aslesen, H.W. and Isaksen, A. (2007) “New perspectives of knowledge intensive services and innovation“, *Geographical Annals*, Vol 89 B (S1), pp 45-58.

- Bettencourt, L.A., Ostrom, A.L., Brown, S.W. and Roundtree, R.I. (2002) "Client Co-Production in Knowledge-Intensive Business Services", *California Management Review*, Vol 44, No. 4, pp 100-128.
- Bierly, P. and Chakrabarti, A. (1996), "Generic Knowledge Strategies in the U.S. Pharmaceutical Industry", *Strategic Management Journal*, vol. 17 (Winter Special Issue), pp. 123-135.
- Bolisani, E. and Scarso, E. (2009) "The role of KIBS in the technological renovation of local economies. Evidence from the computer sector", *International Journal of Entrepreneurship and Innovation Management*, Vol 9, Nos. 1/2, pp 29-46.
- den Hertog, P. (2000) "Knowledge-intensive Business Services as co-producers of innovation", *International Journal of Innovation Management*, No. 4, pp 481-528.
- Eisenhardt, K.M. and Santos, F.M. (2002) "Knowledge-Based View: A New Theory of Strategy?", in Pettigrew, A., Howard, T. and Whittington, R. (Eds.) *Handbook of strategy and management*, Sage Publications, London, pp 139-164.
- Grant, R.M. (1996) « Toward a Knowledge-Based Theory of the Firm", *Strategic Management Journal*, Vol 17, Winter, pp 109-122.
- Haider, S. (2009) "The Organizational Knowledge Iceberg: An Empirical Investigation", *Knowledge and Process Management*, Vol 16, No. 2, pp 74-82.
- Holsapple, C.W. and Jones, K. (2006) "Knowledge Management Strategy Formation", in Schwartz, D.G. (Ed.), *Encyclopedia of Knowledge Management*, Idea Group, Hershey, PA, pp 419-428.
- Holsapple, C.W. and Singh, M. (2001) "The knowledge chain model: activities for competitiveness", *Expert Systems with Applications*, Vol 20, pp 77-98.
- Hyypiä, M. and Kautonen, M. (2005), "Dimensions of Proximity in Relationships between Knowledge Intensive Business Service Firms and Their Clients", *Regional Studies Association - International Conference on Regional Growth Agendas*, Aalborg, Denmark, May 28<sup>th</sup> – 31<sup>st</sup>.
- Kasten, J. (2007) "Knowledge strategy and its influence on knowledge organization", *Proceedings of the North American Symposium on Knowledge Organization*. Vol 1, <http://dlist.sir.arizona.edu/1907>.
- Kim, Y-G., Yu, S-H. and Lee, J-H. (2003) "Knowledge strategy planning: methodology and case", *Expert Systems with Applications*, Vol 24, No. 3, pp 295-307.
- Landoni, P., Micelotta, E. and Verganti, R. (2008) "Innovation in Knowledge Intensive Business Services: how is strategy linked to Knowledge levers?", *XIX Riunione Scientifica Annuale AilG, Palermo*, 23 - 24 ottobre.
- Leedy, P. D. and Ormrod, J. E. (2005). *Practical research: Planning and design*, 8<sup>th</sup> Edition, Prentice Hall, Upper Saddle River, NJ.
- Leiponen, A. (2006) "Organization of knowledge exchange: an empirical study of knowledge-intensive business service relationships", *Economy of Innovation and New Technology*, Vol 15, Nos. 4/5, pp 443-464.
- Martinez-Fernandez, M.C. and Miles, I. (2006) "Inside the software firm: co-production of knowledge and KISA in the innovation process", *International Journal of Services Technology and Management*, Vol 7, No. 2, pp 115-125.
- Martinez-Fernandez, M.C., Soosay, C.A., Bjorkli, M. and Tramayne, K. (2004) "Are Knowledge-Intensive Service Activities Enablers of Innovation Processes? – A Study of Australian Software Firms", *CINet Referred Conference Proceedings Conference*, pp 986-1000.
- Miles, I. (2005) "Knowledge-intensive business services: prospects and policies", *Foresight*, Vol 7, No. 6, pp 39-63.
- Miles, I., Kastrinos, N., Bilderbeek, R. and den Hertog, P. (1995) "Knowledge-Intensive Business Services: Users, Carriers and Sources of Innovation", *EIMS Publication*, n. 15.
- Mintzberg, H. (1994) *The Rise and Fall of Strategic Planning*, Basic Books, New York.
- Miozzo, M. and Grimshaw, D. (2005) "Modularity and innovation in knowledge-intensive business services: IT outsourcing in Germany and UK", *Research Policy*, Vol 34, pp 1419-1439.
- Muller, E. and Doloreux, D. (2009) "What we should know about knowledge-intensive business services", *Technology in Society*, Vol 31, pp 64-72.
- Muller, E. and Zenker, A. (2001) "Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems", *Research Policy*, Vol 30, No. 9, pp 1501-1516.
- Porter, M.E. (1980) *Competitive Strategy*, The Free Press, New York.
- Rajala, R., Westerlund, M., Rajala, A. and Leminen, S. (2008) "Knowledge-intensive service activities in software business", *International Journal of Technology Management*, Vol 41, Nos. 3/4, pp 273-290.
- Smedlund, A. and Toivonen, M. (2007) "The role of KIBS in the IC development of regional clusters", *Journal of Intellectual Capital*, Vol 8, No 1, pp 159-170.
- Sveiby, K-E. (2001) "A knowledge-based theory of the firm to guide in strategy formulation", *Journal of Intellectual Capital*, Vol 2, No. 4, pp 344-358.
- Thomi, W. and Böhn, T. (2003) "Knowledge Intensive Business Services in Regional Systems of Innovations. Initial Results from the Case of Southeast Finland", *43<sup>rd</sup> European Congress of the Regional Science Association*, August 27-30.
- von Krogh, G., Nonaka, I. and Aben, M. (2001) "Making the Most of Your Company's Knowledge: A Strategic Framework", *Long Range Planning*, Vol 34, pp 421-439.
- Wenger, E. (2004) "Knowledge management as a doughnut: Shaping your knowledge strategy through communities of practice", *Ivey Business Journal Online*, January/February.
- Yin, R.K. (1989) *Case study research: Design and methods*, Sage Publishing, Beverly Hills, CA.
- Zack, M.H. (1999) "Developing a Knowledge Strategy", *California Management Review*, Vol 41, No. 3, pp 125-145.